FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/05/07
Date Received: 06/15/07
Project: D.O.E. Stormwater, PO# M116736, F&BI 706176
Date Analyzed: 06/15/07

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH USING EPA METHOD 9040C

Sample ID Laboratory ID	pH
M116736-3 706176-03	6.3

Date of Report: 07/05/07
Date Received: 06/15/07
Project: D.O.E. Stormwater, PO# M116736, F&BI 706176
Date Analyzed: 06/15/07

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TURBIDITY USING METHOD SM2130B

Results Reported as NTU

Sample ID Laboratory ID	Date Sampled	Time Sampled	Turbidity
M116736-3 706176-03	06/15/07	1030	31
Method Blank			<0.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	M116736-1	Client:	Alaskan Copper Works
Date Received:	06/15/07	Project:	PO# M116736, F&BI 706176
Date Extracted:	06/18/07	Lab ID:	706176-01 10x
Date Analyzed:	06/19/07	Data File:	706176-01 10x.011
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	BTB

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Bismuth	96	60	125

Analyte:	Concentration ug/L (ppb)
Lead	33.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	M116736-2	Client:	Alaskan Copper Works
Date Received:	06/15/07	Project:	PO# M116736, F&BI 706176
Date Extracted:	06/18/07	Lab ID:	706176-02 10x
Date Analyzed:	06/19/07	Data File:	706176-02 10x.012
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	BTB

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	94	60	125

Analyte:	Concentration ug/L (ppb)
Copper	432
Zinc	773

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	NA	Project:	PO# M116736, F&BI 706176
Date Extracted:	06/18/07	Lab ID:	I7-220 mb
Date Analyzed:	06/19/07	Data File:	I7-220 mb.008
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	BTB

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	93	60	125
Bismuth	93	60	125

Analyte:	Concentration ug/L (ppb)
Copper	<1
Zinc	<1
Lead	<1

Date of Report: 07/05/07
Date Received: 06/15/07
Project: D.O.E. Stormwater, PO# M116736, F&BI 706176

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH BY METHOD 9040C

Laboratory Code: 706175-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	6.9	6.8	1	0-20

Date of Report: 07/05/07
Date Received: 06/15/07
Project: D.O.E. Stormwater, PO# M116736, F&BI 706176

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TURBIDITY USING METHOD SM2130B

Laboratory Code: 706172-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Turbidity	NTU	4.2	4.1	2	0-20

Date of Report: 07/05/07
Date Received: 06/15/07
Project: D.O.E. Stormwater, PO# M116736, F&BI 706176

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 706135-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Copper	ug/L (ppb)	1.57	1.51	4	0-20
Zinc	ug/L (ppb)	2.02	2.26	11	0-20
Lead	ug/L (ppb)	<1	<1	nm	0-20

Laboratory Code: 706135-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Copper	ug/L (ppb)	20	1.57	103	50-150
Zinc	ug/L (ppb)	50	2.02	109	50-150
Lead	ug/L (ppb)	10	<1	103	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Copper	ug/L (ppb)	20	106	70-130
Zinc	ug/L (ppb)	50	108	70-130
Lead	ug/L (ppb)	10	102	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probablility.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - The sample was diluted due to insufficient sample volume. Detection limits are raised due to dilution

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

fc – The compound is a common laboratory and field contaminant.

fp – Compounds in the sample matrix interfered with quantitation of the analyte. The reported concentration may be a false positive.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

July 5, 2007

Gerry Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on June 15, 2007 from the D.O.E. Stormwater, PO# M116736, F&BI 706176 project. There are 9 pages included in this report. Sample M116736-1 was sent to Analytical Resources, Inc. for hardness analysis. In addition, sample M116736-4 was also sent to Analytical Resources, Inc. for oil and grease analysis. Review of the enclosed report indicates that all quality assurance was acceptable.

Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ACU0705R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

July 5, 2007

DUPLICATE

INVOICE #07ACU0705-2

Accounts Payable
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

RE: Project D.O.E. Stormwater, PO# M116736, F&BI 706176 - Results of testing requested by Gerry Thompson for material submitted on June 15, 2007.

1 sample analyzed for Turbidity by Method SM214A @ $18 per sample	$ 18.00
1 sample analyzed for Total Zn and Cu by Method 200.8 @ $50 per sample	50.00
1 sample analyzed for pH by Method 9050A @ $25 per sample	25.00
1 sample analyzed for Oil and Grease by Method 1664 @ $70 per sample	70.00
1 sample analyzed for Total Lead by Method 200.8 @ $30 per sample	30.00
1 sample analyzed for Hardness by Method SM2340 @ $66 per sample	66.00
Amount Due	$ 259.00

FEDERAL TAX ID # (b) (6)

706176

SAMPLE CHAIN OF CUSTODY

ME 06-15-07 AI4

Send Report To Gerry Thompson

Company Alaskan Copper Works

Address 628 South Hanford

City; State, ZIP Seattle, WA 98134

Phone # 382-8379 Fax # 382-4309

SAMPLERS (signature)

PROJECT NAME/NO. D.O.E. STORMWATER

PO # M116736

REMARKS

Page # _____ of _____

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	Total Cr, Cu, Ni, Zn by 6010	Oil and Grease by 1664 (no silica)	Hardness by SM2340B	Total Lead by 6020	Total Cu, Zn by 6010	pH by 9040A	Turbidity by SM241A					Notes
						ANALYSES REQUESTED											
M116736-1	01	6/15/07	10:30	H_2O	1			X	X								
M116736-2	02	6/15/07	10:30	H_2O	1					X							
M116736-3	03	6/15/07	10:30	H_2O	1						X	X					
M116736-4	04	6/15/07	10:30	H_2O	1		X										

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Gerald Thompson	ACW	6/15/07	1:36 pm
Received by:		James Bruya	F&BE	6/15/07	1:36 PM
Relinquished by:					
Received by:					

Samples received at 22 °C

Analytical Resources, Incorporated
Analytical Chemists and Consultants

June 29, 2007

Mike Erdahl
Friedman & Bruya
3012 – 16th Avenue West
Seattle, WA 9819-2029

Project: 706176 PO# H-948
ARI Job: LD78

Dear Mike:

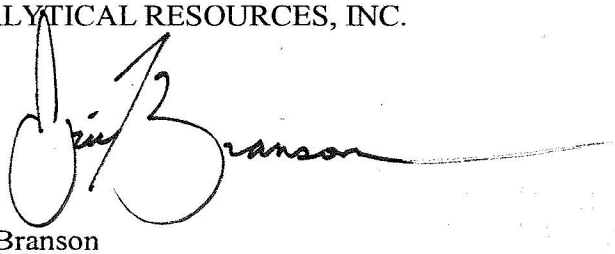
Please find enclosed the original *Chain of Custody* record, sample receipt paperwork, and analytical results for the samples from the project referenced above. Analytical Resources, Inc. accepted two water samples in good condition on June 18, 2007. Please refer to the enclosed *Cooler Receipt Form* for further details regarding sample receipt.

The samples were analyzed for Oil & Grease (HEM - Method 1664A) and Hardness (Method 6010), as requested on the *Chain of Custody*.

These analyses were completed free of irregularities.

Quality control analysis results are included for your review. Copies of the reports and all associated raw data will be kept on file electronically at ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,
ANALYTICAL RESOURCES, INC.



Eric Branson
Project Services Associate
(206) 695-6213
eric@arilabs.com
www.arilabs.com

• Enclosures •

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: FBI Project Name: 706176

COC No: — Delivered by: Courier

Assigned ARI Job No: LD78 Tracking No: —

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	4.5 °C	

Cooler Accepted by: [signature] Date: 6/18/7 Time: 1255

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?	YES	NO
What kind of packing material was used?	BW	
Was sufficient ice used (if appropriate)?	(YES)	NO
Were all bottles sealed in individual plastic bags?	YES	(NO)
Did all bottle arrive in good condition (unbroken)?	(YES)	NO
Were all bottle labels complete and legible?	(YES)	NO
Did all bottle labels and tags agree with custody papers?	(YES)	NO
Were all bottles used correct for the requested analyses?	(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)	(YES)	NO
Were all VOC vials free of air bubbles? (NA)	YES	NO
Was sufficient amount of sample sent in each bottle?	(YES)	NO

Samples Logged by: BG Cng Date: 6/18/07 Time: 1400

***** Notify Project Manager of discrepancies or concerns *****

Explain discrepancies or negative responses:

By: Date:

PRESERVATION VERIFICATION 06/18/07
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **LD78**

Inquiry Number: NONE
Analysis Requested: 06/18/07
Contact: Erdahl, Michael
Client: Friedman & Bruya, Inc.
Logged by: BC
Sample Set Used: Yes-423
Validatable Package: No
Deliverables:

PC: Eric
VTSR: 06/18/07

Project #: 706176
Project: H-948
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
07-12376 LD78A	M116736-1						TOT DK													
07-12377 LD78B	M116736-4					DK														

Checked By BC Date 6/18/07

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: M116736-1
SAMPLE

Lab Sample ID: LD78A
LIMS ID: 07-12376
Matrix: Water
Data Release Authorized:
Reported: 06/25/07

QC Report No: LD78-Friedman & Bruya, Inc.
Project: H-948
706176
Date Sampled: 06/15/07
Date Received: 06/18/07

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L	Q
3010A	06/19/07	6010B	06/22/07	**7440-70-2**	**Calcium**	0.05	**20.4**	
3010A	06/19/07	6010B	06/22/07	**7439-95-4**	**Magnesium**	0.05	**2.42**	

Calculated Hardness (mg-CaCO3/L): 61

U-Analyte undetected at given RL
RL-Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: LD78MB
LIMS ID: 07-12376
Matrix: Water
Data Release Authorized:
Reported: 06/25/07

QC Report No: LD78-Friedman & Bruya, Inc.
Project: H-948
706176
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L	Q
3010A	06/19/07	6010B	06/22/07	7440-70-2	Calcium	0.05	0.05	U
3010A	06/19/07	6010B	06/22/07	7439-95-4	Magnesium	0.05	0.05	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: LD78LCS
LIMS ID: 07-12376
Matrix: Water
Data Release Authorized:
Reported: 06/25/07

QC Report No: LD78-Friedman & Bruya, Inc.
Project: H-948
706176
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Calcium	6010B	10.5	10.0	105%	
Magnesium	6010B	10.6	10.0	106%	

Reported in mg/L

N-Control limit not met
Control Limits: 80-120%

SAMPLE RESULTS-CONVENTIONALS
LD78-Friedman & Bruya, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 06/22/07

Project: H-948
Event: 706176
Date Sampled: 06/15/07
Date Received: 06/18/07

Client ID: M116736-4
ARI ID: 07-12377 LD78B

Analyte	Date Batch	Method	Units	RL	Sample
HEM Oil & Grease	06/19/07 061907#1	EPA 1664A	mg/L	5.0	7.0

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
LD78-Friedman & Bruya, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 06/22/07

Project: H-948
Event: 706176
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank
HEM Oil & Grease	EPA 1664A	06/19/07	mg/L	< 5.0 U

LAB CONTROL RESULTS-CONVENTIONALS
LD78-Friedman & Bruya, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 06/22/07

Project: H-948
Event: 706176
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	LCS	Spike Added	Recovery
HEM Oil & Grease	EPA 1664A	06/19/07	mg/L	37.2	40.1	92.8%

AKC-0006835

L078

SAMPLE CHAIN OF COUSTODY 4.5°C Ice-yes

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SAMPLERS (signature)

PROJECT NAME/NO.	PO #
706176	H-948

REMARKS

Please Fax Results

TURNAROUND TIME
- [X] Standard (2 Weeks)
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	O&G w/o SG	O&G w/sg	Total Hg	Dissolved Hg	EPH	VPH	Nitrate	Sulfate	Hardness			Notes
M116736-1		6/15/07	10:30	W	1									X			
M116736-4		↓	↓	W	1	X											

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	[signature]	Michael Erdahl	Friedman & Bruya	6/18/07	11:00 AM
Received by:	[signature]	Brian Kegel	ARI	6/18/7	1255
Relinquished by:					
Received by:					